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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/525,768

09/12/2005

Erkki Kalmari

3502-1074

9955

466 7590 07/29/2008

YOUNG & THOMPSON  
209 Madison Street  
Suite 500  
ALEXANDRIA, VA 22314

EXAMINER

WU, IVES J

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

07/29/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/525,768	<b>Applicant(s)</b> KALMARI, ERKKI	
	<b>Examiner</b> IVES WU	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 15-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-25, 27-28 is/are rejected.
- 7) ☒ Claim(s) 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/7/2008;2/28/2005</u> .                                      | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Objections*

(1). **Claims 15, 25-26** are objected to because of the following informalities: Claims 15 and 25-26 recite VP, VPYR and VPAR. Abbreviations are suggested to be replaced with proper terminologies. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(2). **Claims 15-19, 22-24** are rejected under 35 U.S.C. 102(b) as being anticipated by Tanner (US04409102).

As to a pressurization apparatus for biogas in **independent claim 15**, Tanner (US04409102) discloses process for removing contaminants from a stream of methane gas (Title). A feed stream of digester gas from an anaerobic process is compressed to a predetermined pressure of about 300 p.s.i.g. (Abstract, line 1-3). The absorption step is undertaken within a pre-described pressure range corresponding to pressure required for desired purity in view of the limitations of the water flow rate and time of contact of water stream and the stream being purified (Col. 1, line 62-66). Also it is illustrated in the Figure below.

As to a washing water outlet pipe having at least a cut-off valve in **independent claim 15**, Tanner (US04409102) discloses, a predetermined range of liquid level being maintained in

absorber 14 by a liquid control sensor 76, which may be a float control. Control 76 controls a valve 78 in line 38. When the liquid level in absorber 14 falls below a predetermined point, control 76 notices this fact and closes valve 78. This prevents water flow in line 38 to the stripper or back to the activated sludge cycle of the water supply (Col. 5, line 18-25).

As to step of pressurized washing water being fed to the pressurization apparatus containing biogas using washing water pressurization device of washing water inlet pipe in **independent claim 15**, Tanner (US04409102) discloses, feed water in a stream 18 is pressurized to about 300 p.s.i.g. by a water pump 20 and introduced into the top of the absorber (Col. 3, line 50-52). As previously mentioned, the pressure in absorber 14 is maintained at about 300 p.s.i.g. (Col. 5, line 26-27) as shown in the Figure above.

As to step of purified biogas being passed through cut-off means of biogas outlet pipe in **independent claim 15**, Tanner (US04409102) discloses, a check valve 82 in line 22 preventing backflow of gas to the absorber (Col. 4, line 31-32) as shown in the Figure above.

As to step of water level VP in the pressurization apparatus having reached the upper limit VPYR, the cut-off valve of washing water outlet pipe to be open in **independent claim 15**, Tanner (US04409102) discloses, a predetermined range of liquid level being maintained in absorber 14 by a liquid control sensor 76, which may be a float control. Control 76 controls a valve 78 in line 38. It would open the valve 78 in line 38 when the level is at upper limit of the pre-determined range as well known in the art of engineering control routine practice.

As to step of pressurized biogas being passed to pressurization apparatus through biogas inlet pipe in **independent claim 15**, Tanner (US04409102) discloses, after the compression, the feed gas stream being introduced into an absorber 14 as a stream 16 (Col. 3, line 48-49) as shown in the Figure above.

As to the water level VP in the pressurization apparatus having reached the lower limit VPAR, the cut-off valve of washing water outlet pipe to be closed open in **independent claim 15**, Tanner (US04409102) discloses, a predetermined range of liquid level being maintained in absorber 14 by a liquid control sensor 76, which may be a float control. Control 76 controls a valve 78 in line 38. When the liquid level in absorber 14 falls below a predetermined point, control 76 notices this fact and closes valve 78. This prevents water flow in line 38 to the stripper

or back to the activated sludge cycle of the water supply (Col. 5, line 18-25) as shown in the Figure above.

As to biogas inlet pipe comprising a one-way valve to control the flow of biogas in **claims 16 and 23**, Tanner (US04409102) discloses check valve 74 as shown in the Figure above which reads on the limitations as claimed.

As to biogas being fed with feeding means at a pressure of 1 to 100 at gauge in **claim 17**, Tanner (US04409102) discloses, with respect to the drawing, a low pressure feed gas stream 10 of digester gas, being compressed in a feed gas compressor 12 to about 300 p.s.i.g (Col. 3, line 44-46).

As to washing water being fed with washing water pressurization device at a pressure of 10 to 600 at gauge in **claim 18**, Tanner (US04409102) discloses, feed water in a stream 18 being pressurized to about 300 p.s.i.g by a water pump 20 and introduced into the top of the absorber (Col. 3, line 50-52).

As to a carbon dioxide removal unit being connected to pressurization apparatus in **claim 19**, Tanner (US04409102) discloses, stripper 40 receiving its water and dissolved carbon dioxide and any hydrogen sulfide through line 38. It receives its air through blower 42. The stripper performs its function in a known manner by the countercurrent contact of released carbon dioxide and hydrogen sulfide from descending water with ascending air (Col. 5, line 34-39).

As to one or more dryers for pressurized biogas being connected to pressurization apparatus in **claim 22**, Tanner (US04409102) discloses, dryer 32 including a pair of adsorbent vessel dryers 124 and 126. The dryers are air dryers, valve 128 is connected with line 22 as shown in the Figure above.

As to one or more pressure tanks for storage of pressurized biogas being connected to pressurization apparatus in **claim 24**, Tanner (US04409102) discloses treated gas from the absorber, essentially methane being either compressed for introduction into storage tanks or dried and used as pipeline gas (Abstract, line 12-14).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1797

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(3). **Claims 20, 25, 27-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanner (US04409102) in view of Dillon (US05480860A).

As to one or more nebulizers for washing water in **claim 20**, Tanner (US04409102) discloses countercurrent water entering the absorber at the top and being sprayed against the counter-flowing gaseous stream. The purified methane then may be dried and passed from the system (Col. 2, line 14-17). Tanner **does not teach** nebulizer for the spray as claimed.

However, Dillon (US05480860A) discloses methods for reducing sulfides in sewage gas (Title). The present composition may be introduced into the system by atomizers (nebulizer) in the ducting or inlet systems of feeding wet scrubbers. Moreover, the present method may be carried out by contacting the gas with the triazine compositions in wet scrubbers (Col. 4, line 67 - Col. 5, line 4).

The advantage of using atomizers for the spray in the scrubber is to generate smaller droplets in order to increase contacts and efficiency as well known in the arts.

Therefore, it would have been obvious at time of the invention to install nebulizer (atomizer) of Dillon for the absorber of Tanner in order to attain the above-cited advantage.

As to the pressurization apparatus in a method for pressurizing biogas in **independent claim 25**, the disclosure of Tanner is incorporated herein by reference, the most subject matters as currently claimed, have been recited in applicant's claim 15, and have been discussed therein.

As to operating cycles of pressurized washing water being fed to the pressurization apparatus containing biogas using washing water pressurization device; the water level VP in the

Art Unit: 1797

pressurization apparatus having reached the upper limit VPYR, the cut-off valve of washing water outlet pipe to be open; pressurized biogas being passed to pressurization apparatus through biogas inlet pipe; water level VP in the pressurization apparatus having reached the lower limit VPAR, the cut-off valve of washing water outlet pipe to be closed in a method in **independent claim 25**, the disclosure of Tanner is incorporated herein by reference, the most subject matters as currently claimed, have been recited in applicant's claim 15, and have been discussed therein.

As to at least as the water level VP is lower, purified biogas being to be passed through cut-off means of biogas outlet pipe in method in **independent claim 25**, Tanner (US04409102) disclose, the pressure in absorber 14 being maintained at about 300 p.s.i.g through a pressure regulated valve 80 in line 22. when the pressure in line 22 drops below 300 p.s.i.g., valve 80 closes to permit the pressure in the absorber to increase to the 300 p.s.i.g. operating point (Col. 5, line 26-31). It would be obvious that treated gas is passed through check valve 82 of outlet pipe 22 as the water level being lowered. Because, when the liquid level being high to reach upper limits in predetermined range, less gas volume is in the absorber, drainage take places and gas pressure in the absorber decreases which leads to the close of valve 80 to increase the pressure of absorber. Conclusively, as the water level is lowered, valve 80 will not close, then, treated gas will flow through check valve 82.

As to washing water being fed at a pressure of 10 to 600 at gauge in **claim 27**, Tanner (US04409102) discloses, feed water in a stream 18 being pressurized to about 300 p.s.i.g. by a water pump 20 and introduced into the top of the absorber (Col. 3, line 50-52).

As to pressurization apparatus in a method in **claim 28**, the disclosure of Tanner is incorporated herein by reference, the most subject matters as currently claimed, have been recited in applicant's claim 15, and have been discussed therein.

As to manually operated and/or automatic control device to control pressurization apparatus accordingly to the method of claim 25 in **claim 28**, it would be obvious to have manually operated and/or automatic control device to operate the control device in order to perform its function.

(4). **Claim 21** is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanner (US04409102).



As to pressurization apparatus comprising two or more washing water pressurization device in **claim 21**, it would be obvious to have more than one pressurization device because of duplications in parts. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

***Allowable Subject Matter***

(5). **Claim 26** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims because Tanner (US04409102) does not teach the liquid level controlling function 76 on the inlet washing water flow control valve 94.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IVES WU whose telephone number is (571)272-4245. The examiner can normally be reached on 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Examiner: Ives Wu

Art Unit: 1797

Date: July 22, 2008

/Duane S. Smith/  
Supervisory Patent Examiner, Art Unit 1797  
7-24-08